**Test Series: May, 2020**

**MOCK TEST PAPER – 1**

**FINAL COURSE: GROUP – II**

**PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING**

**SUGGESTED ANSWERS/HINTS**

**1. (a)** Products are produced simultaneously therefore when additional 40,000 Kgs of R will produced then 20,000 Kgs of Q will also produced. The input of Z required for these additional 40,000 Kgs of R and 20,000 Kgs of Q will 60,000 Kgs of material Z.

Hence, the cost of processing of 60,000 Kg of material Z.

| Particulars | Rs. |
|---|---|
| Cost of Raw Material (60,000 Kgs × Rs. 6 per Kg) | 3,60,000 |
| Variable Processing Cost (60,000 × Rs. 4 per Kg) | 2,40,000 |
| Total Processing Cost | 6,00,000 |
| Sales Revenue (from 40,000 units × Rs. 9 per Kg of R) | 3,60,000 |
| Balance Cost (to be recovered) | 2,40,000 |
| Current Sales (45,000 Kg of Q × Rs. 15) | 6,75,000 |
| Total Sales Revenue to be earned from Sales of Q (45,000 + 20,000 = 65,000 Kgs) | 9,15,000 |

Minimum Price per Kg of Q to be recovered Rs. 14.08 (Rs. 9,15,000/ 65,000 Kgs)

**(b)** Let 'x' be the selling price per unit,

Therefore, Turnover = 80,000 x

Capital Employed = 12,00,000 +40,000 x

Return on capital employed after tax = 12%

Therefore,

Return on capital employed before tax = 12/0.6

= 20%

Therefore, Return on capital employed before tax

= 20% of (12,00,000+40,000x)

= 2,40,000+8,000x

| | |
|---|---|
| Sales | 80,000 x |
| Variable Cost | 9,60,000 |
| Fixed Cost | 5,00,000 |
| Profit | 80,000x – 14,60,000 |
| **Therefore** | |
| 80000x – 1460000 = | 2,40,000 + 8,000x |
| 72000x = | 17,00,000 |
| X = | Rs. 23.61 |

**(c)**

| Item | Value-Added/ Non-Value Added |
|---|---|
| Polishing of furniture used by a systems engineer in a software firm. | Non-Value Added |
| Maintenance by a software company of receivables management software for a banking company. | Value-Added |
| Painting of pencils manufactured by a pencil factory. | Value-Added |
| Delivering Packages by a delivery service. | Value-Added |
| Providing legal research for legal services. | Value-Added |
| Too long or insufficient set up times | Non-Value Added |

**(d)** The assignment problem is special case of transportation problem; it can also be solved by transportation method. But the solution obtained by applying this method would be typically degenerate. This is because the optimality test in the transportation method requires that there must be m+n-1 allocations/assignments. But due to the special structure of assignment problem of order n × n, any solution cannot have more than n assignments. Thus, the assignment problem is naturally degenerate. In order to remove degeneracy, n-1* number of dummy allocations will be required in order to proceed with the transportation method. Thus, the problem of degeneracy at each solution makes the transportation method computationally inefficient for solving an assignment problem.

**(*) $\underline{m+n-1} - n \Rightarrow \underline{n+n-1} - n \Rightarrow \underline{2n-1} - n \Rightarrow \underline{n-1}$**

**2. (a)**

| | Capacity | |
|---|---|---|
| | 80% (Domestic sale) | 40% (Export order) |
| | Rs. in lakhs | |
| Sales Value | 57.60 | |
| Prime Cost (50% of Sales Value ie., 2/3 * 75%) | 28.80 | 6.00 |
| Fixed Cost (Factory Overheads, as given) | 10.80 | 4.20 |
| Administration and selling<br>- variable (20%*75% = 15% of Sales Value) | 8.64 | |
| - fixed | 3.60 | |
| Shipping | | 1.00 |
| Total Cost | 51.84 | 11.20 |
| Profit | 5.76 | |
| Add : Profit (Domestic Profit @80% Capacity = 10% of Sales. Hence 11.11% on Cost) | | 1.24 |
| Minimum Export price | | 12.44 |

**(b) Determination of Minimum Value of Special Order (considering relevant cost)**

| Cost Element | Relevant / Irrelevant | Calculation | Amount (Rs.) |
|---|---|---|---|
| Material – A | Realisable value is relevant. | 5,000 Kg. × Rs.15 | 75,000 |
| Material – B | Relevant as it has to be purchased. | 8,000 Kg. × Rs.25 | 2,00,000 |
| Other hardware items | Relevant as it is to be incurred. | ---- | 10,000 |
| Dept X – Labour oriented | Relevant as fresh labours are to be hired. | 5 men × 1 month × Rs.7,000 | 35,000 |
| Dept Y – Machine oriented | Irrelevant, as spare capacity is available. | ---- | ---- |
| Pattern and Specification | Relevant, Net cost after considering its resale value. | Rs. 15,000 − Rs. 2,000 | 13,000 |
| | | Minimum Value of Special Order | **3,33,000** |

**(c) (i)** Actual learning curve rate is 80%.

Time taken to produce the first machine = 600 hours

Average time taken to produce two machines = 600 × 80% hours

= 480 hours.

Cumulative time taken to produce two machines

= 480 × 2 hours

= 960 hours.

Time taken to produce the second machine = (960 – 600)hours

= 360 hours.

(ii) *Actual learning curve rate is 90%.*

Time taken to produce the first machine = 600 hours

Average time taken to produce two machines = 600 × 90% hours

= 540 hours.

Cumulative time taken to produce two machines

= 540 × 2 hours

= 1080 hours.

Time taken to produce the second machine = (1,080 – 600) hours

= 480 hours.

The time taken to produce the second machine is lower at 80% learning rate and hence 80% learning rate shows faster learning rate.

**3. (a)** Let x and y denote the number of units produced for the product A & B respectively.

Maximize (Profit) $Z = 80x + 100y$

Subject to $x + 2y \leq 720$ (Machining Time)

$5x + 4y \leq 1,800$ (Fabrication Time)

$3x + y \leq 900$ (Assembly Time)

$x \geq 0, y \geq 0$

**SIMPLEX METHOD**

By introducing slack variables $s_1 \geq 0$, $s_2 \geq 0$ and $s_3 \geq 0$ the linear programming problem in standard form becomes –

Maximize $Z = 80x + 100y + 0s_1 + 0s_2 + 0s_3$

Subject to $x + 2y + s_1 = 720$ (Machining Time)

$5x + 4y + s_2 = 1,800$ (Fabrication Time)

$3x + y + s_3 = 900$ (Assembly Time)

$x, y, s_1, s_2, s_3 \geq 0$

We shall prepare the initial simplex tableau as follows:

**SIMPLEX TABLEAU-I**

| $C_j$ | | | 80 | 100 | 0 | 0 | 0 | Minimum Ratio |
|---|---|---|---|---|---|---|---|---|
| $C_B$ | Basic Variable (B) | Value of Basic Variables $b(=X_B)$ | x | y | $s_1$ | $s_2$ | $s_3$ | |
| 0 | $s_1$ | 720 | 1 | 2 | 1 | 0 | 0 | 360 ← |
| 0 | $s_2$ | 1,800 | 5 | 4 | 0 | 1 | 0 | 450 |
| 0 | $s_3$ | 900 | 3 | 1 | 0 | 0 | 1 | 900 |
| | | $Z_j = \sum C_{Bi}X_j$ | 0 | 0 | 0 | 0 | 0 | |
| | | $C_j - Z_j$ | 80 | 100 ↑ | 0 | 0 | 0 | |

**SIMPLEX TABLEAU-II**

| $C_j$ | | | 80 | 100 | 0 | 0 | 0 | Minimum Ratio |
|---|---|---|---|---|---|---|---|---|
| $C_B$ | Basic Variable (B) | Value of Basic Variables $b(=X_B)$ | x | y | $s_1$ | $s_2$ | $s_3$ | |
| 100 | y | 360 | 1/2 | 1 | 1/2 | 0 | 0 | 720 |
| 0 | $s_2$ | 360 | 3 | 0 | -2 | 1 | 0 | 120 ← |
| 0 | $s_3$ | 540 | 5/2 | 0 | -1/2 | 0 | 1 | 216 |
| | | $Z_j = \sum C_{Bi}X_j$ | 50 | 100 | 50 | 0 | 0 | |
| | | $C_j - Z_j$ | 30 ↑ | 0 | -50 | 0 | 0 | |

**SIMPLEX TABLEAU-III**

| $C_j$ | | | 80 | 100 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|
| $C_B$ | Basic Variable (B) | Value of Basic Variables $b(=X_B)$ | x | y | $s_1$ | $s_2$ | $s_3$ |
| 100 | y | 300 | 0 | 1 | 5/6 | -1/6 | 0 |
| 80 | x | 120 | 1 | 0 | -2/3 | 1/3 | 0 |
| 0 | $s_3$ | 240 | 0 | 0 | 7/6 | -5/6 | 1 |
| | | $Z_j = \sum C_{Bi}X_j$ | 80 | 100 | 30 | 10 | 0 |
| | | $C_j - Z_j$ | 0 | 0 | -30 | -10 | 0 |

Since all numbers in the $C_j - Z_j$ row are either negative or zero, the optimum solution to the given problem has been obtained and is given by x = 120 units and 300 units

Maximum Profit = 80 x 120 + 100 x 300

Hence, the optimum solution is to produce 120 units of product A and 300 units of product B to get maximum profit of Rs. 39,600

**(b)** The balanced score card translates an organization's mission and strategy into a comprehensive set of performance measures that provides the framework for implementing its strategy. The balanced score card does not focus solely on achieving financial objectives. It is an approach, which provides information to management to assist in strategic policy formulation and achievement. It emphasizes the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased manner. As a management tool it helps companies to assess overall performance, improve operational processes and enables management to develop better plans for improvements.

*Major components of a balanced scorecard* - The components of balanced score cards varies form business to business. A well designed balanced scorecard combines financial measures of post performance with measures of firm's drivers of future performance. The specific objectives and measures of an organization-balanced scorecard can be derived from the firm's vision and strategy. Generally, balanced score card has the following four perspectives from which a company's activity can be evaluated.

**(i)** ***Financial perspective:*** Financial perspective measures the results that the organization delivers to its stakeholders. The measures are: operating income, revenue growth, revenues from new products, gross margin percentage, cost reduction in key areas, economic value added, return on investment.

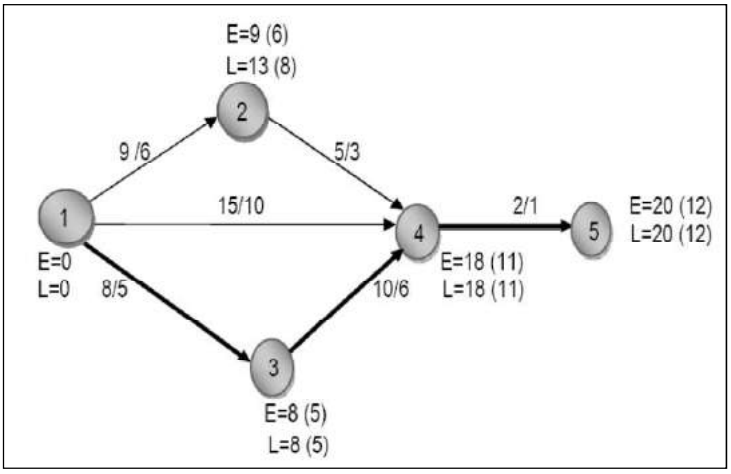
**(ii)** ***Customer perspective:*** The customer perspective considers the business through the eyes of customers, measuring and rejecting upon customer satisfaction.

The measures are: - market share. customer satisfaction, customer retention percentage, time taken to fulfil customer's requests.

**(iii)** ***Internal business perspective:*** The internal perspective focuses attention on the performance of the key internal processes, which drive the business such as innovative process, operation process and post-sales services.

**(iv)** ***Learning & growth perspective*****:** The measure are:- employee education & skills levels, employee turnover ratio, information system availability, percentage of employee suggestion implemented etc.

**4. (a) (i)**




The critical path is 1 – 3 – 4 – 5. The normal length of the project is 20 days and minimum project length is 12 days.

**(ii)** Statement showing Additional Crashing Cost:

| Normal Project Length Days | Job Crashed | Crashing Cost |
|---|---|---|
| 20 | - | - |
| 19 | 3-4 | Rs. 20,000 x1 Day = Rs. 20,000 |
| 18 | 3-4 | Rs. 20,000 x 2 Days = Rs. 40,000 |
| 17 | 3-4 | Rs. 20,000 x 3 Days = Rs. 60,000 |
| 16 | 4-5 | Rs. 20,000 x 3 Days +1 Day x Rs. 60,000 =Rs. 1,20,000 |
| 15 | 3-4,1-4 | Rs. 20,000 x 4 Days + Rs. 60,000 x1 Day + Rs. 45,000 x 1 Day = Rs.1,85,000 |
| 14 | 1-3, 1-4, 2-4 | Rs. 1,85,000 +1 Day x Rs. 40,000 +1 Day x Rs. 45,000+ 1 Day x Rs. 15,000 = Rs. 2,85,000 |
| 13 | 1-3, 1-4, 2-4 | Rs. 2,85,000 +1 Day x Rs. 40,000 +1 Day x Rs. 45,000+ 1 Day x Rs. 15,000 = Rs. 3,85,000 |
| 12 | 1-3, 1-4, 1-2 | Rs. 3,85,000+1 Day x Rs. 40,000 +1 Day x Rs. 45,000 +1 Day x Rs. 30,000 = Rs. 5,00,000 |
| Total Additional Cost *(At shortest duration)* | | Rs. 5,00,000/- |

**(b) Workings**

**Statement Showing "Budgeted Vs Actual Figures"**

| Product | Budgeted Qty. Rolls ('000) [BQ] | Budgeted Margin per Roll (Rs.) [BM] | Budgeted Margin (Rs.'in lacs) | Actual Qty. Rolls ('000) [AQ] | Actual Margin per Roll (Rs.) [AM] | Actual Margin (Rs.'in lacs) | Revised Actual Qty. ('000) [RAQ] |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 = 2×3 | 5 | 6 | 7= 5×6 | 8 |
| Domesti | 600 | 40 | 240.00 | 570 | 27 | 153.90 | 630 (840 ×75%) |
| Industria | 200 | 50 | 100.00 | 270 | 47.5 | 128.25 | 210 (840 ×25%) |
| | 800 | | 340.00 | 840 | | 282.15 | 840 |

Budgeted Market Share (in %) $= \frac{8,00,000\ \text{Rolls}}{80,00,000\ \text{Rolls}}$

$= 10\%$

Actual Market Share (in %) $= \frac{8,40,000\ \text{Rolls}}{70,00,000\ \text{Rolls}}$

$= 12\%$

Average Budgeted Margin (*per Roll)*

$= \frac{₹\ 340\ \text{Lacs}}{8,00,000\ \text{Rolls}}$

$=$ Rs. 42.50

**Computation of sales mix and sales volume Variances**

**Sales Mix Variance** = Standard Margin *Less* Revised Standard Margin

*Or*

= (AQ × BM) – (RAQ × BM)

*Or*

= BM × (AQ – RAQ)

Domestic = Rs. 40 × (5,70,000 – 6,30,000)

= Rs. 24,00,000 (A)

Industrial = Rs. 50 × (2,70,000 – 2,10,000)

= Rs. 30,00,000 (F)

Total = Rs. 24,00,000 (A) + Rs. 30,00,000 (F)

= Rs. 6,00,000 (F)

**Sales Quantity Variance** = Revised Standard Margin *Less* Budgeted Margin

*Or*

= (RAQ × BM) – (BQ × BM)

*Or*

= BM × (RAQ – BQ)

Domestic = Rs. 40 × (6,30,000 – 6,00,000)

= Rs. 12,00,000 (F)

Industrial = Rs. 50 × (2,10,000 – 2,00,000)

= Rs. 5,00,000 (F)

Total = Rs. 1,200,000 (F) + Rs. 500,000 (F)

= Rs. 17,00,000 (F)

**Computation of Market size and share variance.**

**Market Size Variance**

= Budgeted Market Share % × (Actual Industry Sales Quantity *in units* – Budgeted Industry Sales Quantity *in units*) × (Average Budgeted Margin *per unit*)

= 10% × (70,00,000 Rolls – 80,00,000 Rolls) × Rs. 42.50

= 42,50,000 (A)

**Market Share Variance**

= (Actual Market Share % – Budgeted Market Share %) × (Actual Industry

Sales Quantity *in units*) × (Average Budgeted Margin *per unit*)

= (12% – 10 %) × 70,00,000 Rolls × Rs. 42.50

= 59,50,000 (F)

**5. (a) (i)** The company has done extensive exercise in year-I that can be used as a basis for budgeting in year-II by incorporating increase in costs / revenue at expected activity level. Hence, **Traditional Budgeting** would be more appropriate for the company in year-II.

**(ii)** In Traditional Budgeting system budgets are prepared on the basis of previous year's budget figures with expected change in activity level and corresponding adjustment in the cost and prices. But under Zero Base Budgeting (ZBB) the estimations or projections are converted into figures. Since, sales manager is unable to substantiate his expectations into figures so **Traditional Budgeting** would be preferred against Zero Base Budgeting.

**(iii)** **Zero Base Budgeting** would be appropriate as ZBB allows top-level strategic goals to be implemented into the budgeting process by tying them to specific functional areas of the organization, where costs can be first grouped, then measured against previous results and current expectations.

**(iv)** Zero Base Budgeting allocates resources based on order of priority up to the spending cut-off level (maximum level upto which spending can be made). In an organisation where resources are constrained and budget is allocated on requirement basis, **Zero Base Budgeting** is more appropriate method of budgeting.

**(b)** Standard hours produced

| | *Product X* | *Product Y* | *Total* |
|---|---|---|---|
| Output (units) | 1,200 | 800 | |
| Hours per unit | 8 | 12 | |
| Standard hours | 9,600 | 9,600 | 19,200 |

**Actual hours worked**

100 workers $\times$ 8 hours $\times$ 22 days = 17,600

**Budgeted hours per month**

1,86,000/12 = 15,500

Capacity Ratio = $\frac{\text{actual hours}}{\text{Budgeted hours}} \times 100 = \frac{17,600}{15,500}$ = 113.55 %

$$\text{Efficiency Ratio} = \frac{\text{Standard Hours Produced}}{\text{Actual hours}} \times 100 = \frac{19,200}{17,600} \times 100 = 109.09\%$$

$$\text{Activity Ratio} = \frac{\text{Standard Hours Produced}}{\text{Budget hours}} \times 100 = \frac{19,200}{15,500} \times 100 = 123.87\%$$

Relationship : Activity Ratio = Efficiency Ratio × Capacity Ratio

or $123.87 = \frac{109.09 \times 113.55}{100}$

**(c) Statement Showing Flexible Budget for 5,000 units Activity Level**

| Particulars | Amount (Rs.) |
|---|---|
| Overhead A (Rs.12.00 *per hour* × 2 hrs. *per unit* × 5,000 units) | 1,20,000 |
| Overhead B* (Rs. 40,000 + Rs.25 × 5,000 units) | 1,65,000 |
| Overhead C (Rs.12.50 *per hour* × 2 hrs. *per unit* × 4,000 units) | 1,00,000 |
| Total | 3,85,000 |

*Working Note (*)*

Overhead B

Variable Cost (per unit) = $\frac{\text{Change in Overhead Cost}}{\text{Change in Production Units}}$

= $\frac{₹\ 1,90,000 - ₹\ 1,40,000}{6,000\ \text{units} - 4,000\ \text{units}}$

= $\frac{₹\ 50,000}{2,000\ \text{units}}$

= Rs. 25

Fixed Cost = Rs. 1,40,000 – 4,000 units x Rs. 25

= Rs. 40,000

**(d)**

| Cost Reduction | Cost Control |
|---|---|
| Cost Reduction is the achievement of real and permanent reduction in unit cost of products manufactured. | Cost Control involves a comparison of actual with the standards or budgets, to regulate the actual costs. |
| Realistic savings in cost. | There could be temporary savings in cost. |
| Product's Utility, Quality and | Quality Maintenance is not a |

| | |
|---|---|
| Characteristics are retained. | guarantee. |
| It is not concerned with maintenance of performance according to standards | The process involves setting up a target, investing variances and taking remedial measures to correct them. |
| Continuous process of critical examination includes analysis and challenge of standards. | Control is achieved through compliance with standards. Standards by themselves are not examined. |
| Fully dynamic approach. | Less dynamic than Cost Reduction. |
| Universally applicable to all areas of business. Does not depend upon standards, though target amounts may be set. | Limited applicability to those items of cost for which standards can be set. |
| Emphasis here is partly on present costs and largely on future costs. | Emphasis on present and past behaviour of costs. |
| The function of Cost Reduction is to find out substitute ways and new means like waste reduction, expense reduction and increased production | Cost Control does competitive analysis of actual results with established standards. |
| Cost reduction is a corrective measure. | Cost Control is a preventive measure. |

**6. (a) Statement Showing Contribution *per unit***

**(Rs.)**

| Particulars | Division X | | | Division Y | | Division Z |
|---|---|---|---|---|---|---|
| | Sale to | Internal Transfer to | | Purchase from | Transfer from | Transfer from |
| | Outside | Y | Z | Outside | X | X |
| Selling Price | 25.00 | --- | --- | 65.00 | 65.00 | 90.00 |
| Transfer Price | --- | 24.00* | 25.00# | --- | --- | --- |
| Direct Material (Excluding Material 'X') | 8.00 | 8.00 | 8.00 | 22.00 | 22.00 | 40.00 |
| Direct Labour | 4.00 | 4.00 | 4.00 | 6.00 | 6.00 | 8.00 |
| Variable Overhead | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Purchase Price 'X' | --- | --- | --- | 23.00 | --- | --- |
| Transfer Price 'X' | --- | --- | --- | --- | 24.00 | 25.00 |
| Modification Cost | --- | --- | --- | 3.00 | 2.00 | 1.00 |
| Contribution | 11.00 | 10.00 | 11.00 | 9.00 | 9.00 | 14.00 |

**(*)** Division 'Y' will not pay Division 'X' anything more than Rs. 24, because at 24, it will incur
additional cost of Rs. 2 per unit to modify it, Rs. 23 + Rs. 3 = Rs. 26, the outside cost.

**(#)** To purchase material X from outside is costly for Division 'Z' as after modification at own
shop floor, cost of the same comes to Division 'Z' is Rs. 28 (Rs. 23 + Rs. 5).

If Division 'X' goes to utilize its full capacity in that case labour would not be available for modification to Department 'Z'.

Accordingly Division 'Z' may purchase material X at Rs. 25 from Division 'X' i.e. market price to outsiders.

**Statement Showing Internal Transfer Decision (units)**

| Particulars | X | Y | Z |
|---|---|---|---|
| Existing Capacity …(A) | 6,000 units | 3,000 units | 3,000 units |
| Maximum Capacity *that can be added* …(B) | 6,000 units | 2,000 units | 2,250 units |
| Total Maximum *that can be produced* …(C)=(A)+(B) | 12,000 units | 5,000 units | 5,250 units |
| Maximum External Demand …(D) | 5,000 units | 5,000 units | 5,000 units |
| Balance …(C) – (D) | 7,000 units | --- | 250 units |
| Internal Transfer to Other Divisions | 5,000 units to Z*<br>2,000 units to Y | N.A. | N.A. |
| Internal Transfer from Other Divisions | N.A. | 2,000 units transfer from X (material X) | 5,000 units transfer from X (material X) |

**(*)** Division 'X' will supply its production to Division 'Z' first (after meeting its external requirement) as contribution from product Z is high.

Statement Showing Decision Whether to Expand or Not

| Particulars | X | Y | Z |
|---|---|---|---|
| Additional Fixed Cost on Expansion | Rs.45,000 | Rs.9,000 | Rs. 23,100 |
| Contribution that can be earned by expansion | Rs. 64,000<br>(4,000 units × Rs. 11 + 2,000 units × Rs. 10) | Rs. 18,000<br>(2,000 units × Rs. 9) | Rs. 28,000<br>(2,000* units × Rs. 14) |
| Net Benefit from | Rs. 19,000 | Rs. 9,000 | Rs. 4,900 |

| | | | |
|---|---|---|---|
| Expansion | | | |
| Decision | Expansion | Expansion | Expansion |

**(*)** As maximum demand of product Z is 5,000 units which Division 'Z' first complete with existing capacity of 3,000 units. Balance 2,000 units from expansion.

**Statement Showing Net Revenue Addition** (Rs.)

| Particulars | X | Y | Z | Total |
|---|---|---|---|---|
| Contribution – External Sales | 55,000 (5,000 units × Rs.11) | 45,000 (5,000 units × Rs. 9) | 70,000 (5,000 units x Rs.14) | 1,70,000 |
| Contribution – Internal Transfer | 75,000 (2,000 units × Rs.10 + 5,000 units × Rs.11) | --- | --- | 75,000 |
| Additional Fixed Cost | 45,000 | 9,000 | 23,100 | 77,100 |
| Net Revenue Addition | | | | 1,67,900 |

**Strategy for Company & Divisions**

(i) Division 'X' will transfer maximum possible material to Division 'Z' as Division 'Z' is offering maximum transfer price to Division 'X'. At the same time Division 'Z' is fetching maximum contribution for the organisation so it is beneficial for both the Divisions as well as organisation as a whole.

(ii) As shown above all the three Divisions are getting net benefit when they are taking decision to expand and hence, all the three Divisions should expand there activity by incurring additional fixed cost on expansion.

**(b) Statement Showing 'Customer Profitability Analysis'**

| Particulars | $T_1$ | $T_2$ | Channel Total | $T_3$ | $T_4$ | Channel Total |
|---|---|---|---|---|---|---|
| | Small Stores | | | Large Stores | | |
| Revenue at List Price | 1,60,000 | 1,80,000 | 3,40,000 | 25,50,000 | 12,00,000 | 37,50,000 |
| Discount | 8,000 | 18,000 | 26,000 | 4,59,000 | 1,44,000 | 6,03,000 |
| Net Revenue | 152,000 | 1,62,000 | 3,14,000 | 20,91,000 | 10,56,000 | 31,47,000 |
| Variable Costs | 1,28,000 | 1,44,000 | 2,72,000 | 20,40,000 | 9,60,000 | 30,00,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Contribution Margin | 24,000 | 18,000 | 42,000 | 51,000 | 96,000 | 1,47,000 |
| Order Processing | 3,000 | 6,750 | 9,750 | 4,500 | 2,250 | 6,750 |
| Regular Deliveries | 1,500 | 3,375 | 4,875 | 2,250 | 1,125 | 3,375 |
| Expedited Deliveries | 2,500 | --- | 2,500 | 2,500 | --- | 2,500 |
| Customer Profit | 17,000 | 7,875 | 24,875 | 41,750 | 92,625 | 1,34,375 |
| Channel Cost | | | 20,250 | | | 48,375 |
| Channel Profit | | | 4,625 | | | 86,000 |

**Suggestions**

T is only just at breakeven point with small pharmaceuticals. To improve profit T should:

(i) Coordinate with $T_2$ to *increase order size* and try to *negotiate a smaller discount*.

(ii) Try to work with $T_1$ to *reduce number of expedited deliveries*.

T makes substantial profit from the large pharmaceuticals. T may give *little extra attention* on $T_4$ as $T_4$ is most favorable customer and its order is for large quantities. For $T_3$, T may have *no options* as $T_3$ accounts more than 50% of Sales.

**7. (a)** Role of Pareto Analysis in Pricing of Product *in the case of firm dealing with multiple products*

In the case of firm dealing with multi products, it would not be possible for it to analyse price-volume relationship for all of them. Pareto Analysis is used for analysing the firm's estimated sales revenue from various products and it might indicate that approximately 80% of its total sales revenue is earned from about 20% of its products. Such analysis helps the top management to delegate the pricing decision for approximately 80% of its products to the lower level of management, thus freeing them to concentrate on the pricing decisions for products approximately 20% of which is essential for the company's survival. Thus, a firm can adopt more sophisticated pricing methods for small proportion of products that jointly account for 80% of total sales revenue. For the remaining 80% products, which account for 20% of the total sales value the firm may use cost based pricing method.

**(b) Target Costing – VALID or NOT VALID**

| Sl. No | Statement | Valid or Not valid |
|---|---|---|
| (i) | Target costing is not applicable to a monopoly market. | **Valid,** Target costing is applied where the price is market determined and in the existence of competitive environment. In monopoly market, a firm is a price maker hence, target costing method is not applicable to a monopoly market. |
| (ii) | Target costing ignores non-value added activities. | **Valid,** In case of target costing the aim is to confine the total cost to set target. To achieve this target cost figure, *non-value added activities are eliminated and hence ignored*. |

**(c) Cost of Quality Statement**

| Particulars of Costs | Cost Incurred (₹) | % of Total Costs of Quality |
|---|---|---|
| **Preventive Costs:** | | |
| Employee training | 1,20,000 | 5.85% |
| **Appraisal Costs:** | | |
| Testing | 1,70,000 | 8.29% |
| **Internal Failure Costs:** | | |
| Rework | 3,00,000 | 17.08% |
| Cost of rejected units | 50,000 | |
| **External Failure Costs:** | | |
| Lost profits from lost sales due to impaired reputation | 8,10,000 | 68.78% |
| Sales return processing | 1,75,000 | |
| Warranty costs | 4,25,000 | |
| **Total Cost of Quality** | **20,50,000** | **100%** |

**(d) Just in Time in Production Process**

1. Products, Spare parts/materials are received directly at production floor. Inspection is completed before delivery of materials.
2. Setup time is minimized while also reducing long production runs, thereby eliminating defectives, scrap and product obsolescence.

3. Work-in-progress is reduced by use of kanban card or working cells or both.
4. Workers are trained on a variety of machines, allowed to stop machines when they identify a problem, fix it or call the repair team and adequately compensated.
5. Supporting systems such as administration, accounting and cost reporting are suitably modified to shift from the conventional mode to the improved JIT requirements.

**(e)**

| Type of Service | Probability | Cumulative Probability | Random No. Interval |
|---|---|---|---|
| Self- Service | 0.60 | 0.60 | 00 - 59 |
| Attended Service | 0.40 | 1.00 | 60 - 99 |

Arrival Rate:

| No. of arrivals | Probability | Cumulative Probability | Random Number Interval |
|---|---|---|---|
| 0 | 0.20 | 0.20 | 00 - 19 |
| 1 | 0.10 | 0.30 | 20 - 29 |
| 2 | 0.35 | 0.65 | 30 - 64 |
| 3 | 0.30 | 0.95 | 65 - 94 |
| 4 | 0.05 | 1.00 | 95 - 99 |